

## ELECTRON BEAM SYSTEM

### ABSTRACT OF THE DISCLOSURE

Provided is an electron beam system, in which an electron beam emitted from an electron gun is irradiated to a stencil mask, and the electron beam that has passed  
5 through the stencil mask is magnified by an electron lens and then detected by a detector having a plurality of pixels so as to form an image of the sample.

Further, an etching apparatus for a sample such as a wafer and a stencil mask includes an inspection apparatus  
10 incorporated therein. The etching apparatus further comprises a load unit, a pattern forming unit, a cleaning unit, a drying unit and an unload unit. The etching apparatus receives the sample from a preceding step, applies respective processing to the sample by said  
15 respective units, and then transfers the processed sample to a subsequent step. A sample loading means, a sample unloading means and a transport means are not required for the transfer of the sample between respective units.

20 Since the beam in a sheet-like configuration is irradiated to the stencil mask from its reverse side, and the transmission beam is image-projected and detected by a TDI detector, therefore a large number of pixels are imaged at the same time, thereby enabling an inspection with a high  
25 throughput.

Further, the present invention provides an electron beam system, in which a primary electron beam emitted from an electron gun is directed to a sample surface of a

sample prepared as a subject to be inspected, and an electron image formed by a secondary electron beam emanated from the sample is magnified and detected, wherein an NA aperture is disposed on the path common to  
5 both of said primary electron beam and said secondary electron beam, an electron lens is disposed in the vicinity of said sample surface, and in this arrangement, a crossover produced by said electron gun, said electron lens and said NA aperture may be in the conjugate  
10 relationships to each other with respect to said primary electron beam.